

## DISTRIBUTIONAL NOTES ON NORTH AND CENTRAL AMERICAN DILARIDAE (NEUROPTERA)<sup>1, 2</sup>

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**ABSTRACT:** *Nallachius americanus* is recorded from South Carolina and central Georgia and a male of *Nallachius pulchellus* is reported from Costa Rica. An emendation is made to the existing key for New World Dilaridae to accomodate the presence of a forked costal crossvein in each forewing of the *N. pulchellus* specimen.

The sixteen species of New World Dilaridae are rarely-collected neuropterans of which only three are known from North and Central America (Adams 1979, Penny 1981). *Nallachius americanus* (McLachlan) has been recorded from Puerto Rico, Venezuela, and the eastern United States (the District of Columbia, Florida, Georgia, Indiana, Kentucky, Maryland, Michigan, Pennsylvania, Texas and Virginia) (Gurney 1947, MacLeod and Spiegler 1961, Adams 1970, Lawson and McCafferty 1984); *Nallachius championi* (Navás) is known from only one locality in Guatemala (Adams 1970); and *Nallachius pulchellus* (Banks) has been recorded from Cuba and the southwestern United States (Arizona) (Alayo 1968, Adams 1970). The present paper records *N. americanus* from South Carolina and central Georgia, *N. pulchellus* from Costa Rica, and provides an emendation to the existing key for New World Dilaridae to accomodate the presence of a forked costal crossvein in each forewing of the Costa Rican specimen of *N. pulchellus*. All specimens are deposited in the Clemson University Arthropod Collection (CUAC), Department of Entomology.

### New United States records for *Nallachius americanus*

GEORGIA: Crawford County, approximately 5 miles SSE of Roberta at Spring Creek, 8.IX.1983, UV light trap, S.W. Hamilton and R.W. Holzenthal, 1♂; SOUTH CAROLINA: Aiken County, Aiken State Park, 7.VII.1988, UV light trap, K. M. Hoffman, 1♂; Kershaw County, Spears Creek at U.S. Route 601, 2.VI.1988, UV light trap, K. M. Hoffman and J. D. Spooner, 1♂; Pickens County, Clemson University Experimental Forest surrounding Lake Issaquena, Wildcat Creek, elevation 235 m., 12-20.VI.1988, Malaise trap, K. M. Hoffman, 1♂; same collection data except 27.VI.-4.VII.1988, 1♂.

The only previous record for Georgia was from Decatur County in the extreme southwestern corner of the state, well within the Upper Coastal Plain. The Crawford County locality extends the range of this species in

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Georgia to the Sandhills region near the center of the state. The South Carolina localities in Aiken and Kershaw Counties are likewise within the Sandhills, whereas the Pickens County locality is in the upper Piedmont.

### **New record for *Nallachius pulchellus***

COSTA RICA: Guanacaste, Parque Nacional Guanacaste, Maritza, Río Tempisquito, 10,958 N, 85,497 W, 19-20.VII.1987, elevation 550 m., at light, R. W. Holzenthal, J. C. Morse, P. J. Clausen, 1♂.

This record represents the first dilarid reported from Costa Rica and confirms the prediction of Adams (1970) that this species would eventually be found in Central America. The specimen was identified by comparing the genitalia both with the description and figures of Adams (1970) and with the cleared genitalia of the holotype in the Museum of Comparative Zoology (MCZ), Harvard University. However, a problem was encountered when using the key of Adams (1970) because the second character used to distinguish *N. pulchellus* in couplet 6 is "costal veinlets simple," and each forewing of the Costa Rican specimen has a distinctly forked costal crossvein at half length. Furthermore, this crossvein is in approximately the same location as a forked costal crossvein figured by Alayo (1968, Fig. 10B) for a male *N. pulchellus* from Cuba. In view of the variation in this character, the phrase "costal veinlets simple" should be deleted from couplet 6 in the key by Adams (1970) and from couplet 8a in the key by Penny (1981), which was modified from the key by Adams. These deletions will not affect the second halves of these couplets and will actually alleviate some confusion, because costal veinlets were not used as characters in the second halves.

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### **LITERATURE CITED**

- Adams, P.A. 1970. A review of the New World Dilaridae. Postilla 148: 1-30.  
Alayo, D. 1968. Los Neuropteros de Cuba. Poeyana (Ser. B) 2: 5-127.  
Gurney, A. B. 1947. Notes on Dilaridae and Berothidae, with special reference to the immature stages of the Nearctic genera (Neuroptera). Psyche 54: 145-169.

- Lawson, H. R. and W. P. McCafferty. 1984. A checklist of Megaloptera and Neuroptera (Planipennia) of Indiana. *Great Lakes Entomol.* 17: 129-131.
- MacLeod, E. G. and P. E. Spiegler. 1961. Notes on the larval habitat and developmental peculiarities of *Nallachius americanus* (McLachlan) (Neuroptera: Dilaridae). *Proc. Entomol. Soc. Wash.* 63: 281-286.
- Penny, N. D. 1981. Neuroptera of the Amazon Basin. Part 2. Dilaridae. *Acta Amazonica* 11: 383-390.

## BOOK REVIEW

THE ANTS. Bert Hölldobler and Edward O. Wilson. 1990. Belknap Press of Harvard University. 732 pp. \$65.

CONTENTS: Introduction; Classification (139 pp.) including keys, illustrations of world genera; Colony formation and structure (36 pp.); Behavior (s.l.) (338 pp.); Communities (17 pp.); Symbiosis (120 pp.); Specialized predators, fungus growers, and harvesters (50 pp.); Weaver ants (11 pp.); Study methods (4 pp.); Glossary, bibliography, index (83 pp.)

This is an overwhelming narrative of the lives of ants, crammed with facts and ideas and glorious illustrations. There is no way that I can comment on specific facts and theories in this book; there are simply too many of them, and one cannot review an elephant by critically examining a few hairs. Suffice it to say that if you are a biologist you must have this book for the sheer excitement of its brilliantly detailed revelation of a bizarre and somehow symbolic world, like one of the busier visions of Hieronymus Bosch. If you are a myrmecologist you will just have to get used to lugging around a 7-lb. volume, because it will be difficult to study, or even think about ants, without this book at hand.

In an age of books that are edited hodgepodes of disparate authors, *THE ANTS* is unique in both its exhaustive coverage and its cohesion. I wish I could say it was a practical model for scientific writing, but the fact is that few of us are up to such a tour de force. Anybody who has attempted to meld information from a dozen references into a succinct and literate paragraph knows the difficulty of such a task; Hölldobler and Wilson do this, apparently effortlessly, for hundreds of pages, utilizing thousands of different references. Enormous numbers of studies are briefly described, with the inclusion of exactly the primary data one might need to draw one's own conclusion, even though the authors have supplied their personal interpretations. In other words, the authors, experts though they are, write for an audience presumed to have its own initiative and powers of deduction. In another eschewal of arrogance, the authors avoid sarcastic treatment or unceremonious dumping of the less plausible theories that circulate through myrmecology. Throughout the book there is an emphasis on fascinating unanswered questions, thereby providing both foundation and direction for future work.

To write such a book, one must, at least temporarily, deliver oneself over to obsession. Thus, though "communities" of ants and ant-plant symbioses are carefully analyzed, there is relatively little coverage of the role of ants in entire ecological communities, and almost an avoidance of the dreadful topic of ants as the principle fodder of a host of other animals, including many vertebrates. The limitations of sociality are hardly explored, so after reading the book one might wonder how there can be more than a million species of arthropods not apotheosized into sociality. Still, it is an obsession that is never tedious, always creative. Even the statement (Chapt. 1) that humans and ants represent the summits of evolution in vertebrates and arthropods respectively, manages to create a rather endearing new hybrid bias: antopocentrism.

To see this book is to covet it, and the price is modest. *THE ANTS* is destined to become as widely distributed as its extraordinary subjects.